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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/724,514	11/26/2003	Sim Dong-Hi	2060-3-92	1835

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EXAMINER	
GHULAMALI, QUTBUDDIN	
ART UNIT	**PAPER NUMBER**
2611	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/08/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/724,514	DONG-HI ET AL.	
	Examiner	Art Unit	
	Qutub Ghulamali	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 November 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the ~~above claim(s)~~ _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ ~~Claim(s) _____ are subject~~ to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *26 November 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

3. Claim 1 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitation "the first data blocks" and "the second data blocks" in lines 4 and 5 respectively. There is insufficient antecedent basis for this limitation in the claim.

Claim 7 recites the limitation "the first data blocks" and "the second data blocks" in lines 6 and 7 respectively. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1, 2, 7, 8 and 10, are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al (US Pub. 2002/0004924) in view of Li et al (US Pub. 2006/0209765).

Regarding claim 1, Kim discloses a signal processing apparatus, comprising:
a feedback signal reception unit receiving status information of at least one channel (as disclosed in page 1, section 0008, 0009; page 2, section 0020, a feedback of reception signal is inherently implied and is implicitly and explicitly shown with reference to fig. 1A as a reverse operation of ACK/NAK from receiver to transmitter);
a data block segmentation unit (422) receiving one of the first data blocks (original) to segment into at least one or more of the second data blocks (page 5, section 0065);

a CRC attachment unit (fig. 4, element 431) attaching a CRC to each of the at least one or more of the second data blocks (page 5, section 0065, 0067);

a data block allocation unit allocating (rate matching or allocation) the at least one or more of the second data blocks according to an antenna via which the at least one or more of the second data blocks will be transmitted (page 5, section 0067, 0066).

Kim, however, does not explicitly disclose at least one or more antennas to transmit the at least one or more of the second data blocks. However, Li discloses(abstract) a plurality of transmit and receive antenna receive data block signals (page 1, section 0012). It would have been obvious to a person skilled in the art at the time the invention was made to utilize a system with transmit and receive antennas as taught by Li in the system of Kim because it can facilitate the transmission and reception of data signals. Note, the use of antennas is inherently implied in Kim even though it is not explicitly shown (page 2, section 0021).

As per claims 2, 8, Kim discloses feedback signal reception unit estimates a channel status using the feedback signal (provides ACK/NACK massage in a HARQ type II, III system, page 2, section 0020).

Regarding claim 7, the steps claimed as method is nothing more than restating the function of the specific components of the apparatus as claimed above and therefore, it would have been obvious, considering the aforementioned rejection for the above claim 1 to a person of ordinary skill at the time of invention to present the claim in an alternate manner to achieve the desired result.

As to claim 10, the limitation of transmitting antennas are partially selected is well known in the art of MIMO transmission. The examiner references art 2006/0182191 to Derwood et al. (page 1, section 0011).

6. Claims 3 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al (US Pub. 2002/0004924) in view of Li et al (US Pub. 2006/0209765) and further in view of Evan et al (USP 6,774,864).

Regarding claims 3 and 9, Kim and Li in combination disclose all limitations of the claim except does not explicitly disclose an antenna selection unit determining at least on of the second data blocks is transmitted via at least one of the at least one or more transmitting antennas. Evans, however, discloses an antenna selection unit determining at least on of the second data blocks is transmitted via at least one of the at least one or more transmitting antennas (abstract; col. 1, lines 44-63; col. 3, lines 35-67; note that the antenna selection ascertain the individual channel strength of data signals much similar to determining the transmission of data from transmitter to receiver via multiple transmit and multiple receive antennas). It would have been obvious to a person skilled in the art at the time the invention was made to utilize an antenna selection unit as taught by Evans in the combined arts of Kim and Li because it can provide efficient use and determination of data signals and minimize potential redundancy in received signals.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 6 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li et al (US Pub. 2006/0209765) in view of Kim et al (US Pub. 2002/0004924).

Regarding claim 6, Li discloses a signal processing apparatus having a plurality of receiving antennas (MIMO OFDM system), comprising:

at least one receiving antenna unit receiving data block (page 1, section 0012);

a channel estimation unit processing the received data blocks to acquire channel status information (page 2, sections 0026, 0029). Li; is silent in disclosing a feedback signal transmission unit transmitting the channel status (state) information. However, Kim discloses a feedback signal transmission unit transmitting the channel status information (figs. 1A, 1B; page 1, sections 0008, 0010, 0013; page 2, section 0020). It would have been obvious to one skilled in the art at the time of the invention to utilize a feedback signal transmission unit transmitting the channel status information as taught by Kim in the system of Li because it can provide source data transmission errors in original signal to improve the system performance.

Regarding claim 14, Li discloses a mobile communication system (a MIMO OFDM system) having a plurality of receiving antennas, a signal processing method comprising :

receiving at least one data block including a CRC bits (page 1, section 0006, section 0012);

acquiring channel status (state) information using the CRC bits (space time processor and space time decoders each require channel state information) (page 2, sections 0026, 0029). Kim does not explicitly disclose transmitting the channel status information. However, Kim discloses transmitting the channel status information (figs. 1A, 1B; page 1, sections 0008, 0010, 0013; page 2, section 0020). It would have been obvious to one skilled in the art at the time of the invention to utilize a feedback signal transmission unit transmitting the channel status (state) information as taught by Kim in the system of Li because it can use source data transmission errors in original signal to improve the system performance.

Allowable Subject Matte r

9. Claims 4, 5, 12 and 13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims including overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US Patents:

US Patent (5,598,427) to Arthur et al.

US Patent (6,961,388) to Ling et al.

US Patent (5,822,359) to Bruckert et al.

US Pub. (2006/0007895) to Coralli et al.

Publications:

Wolniansky, P.W.; Foschini, G.J.; Golden, G.D.; Valenzuela, R.A.; "V-BLAST: an architecture for realizing very high data rates over the rich-scattering wireless channel", IEEE, Oct. 1998 Page(s) 295 – 300.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Qutub Ghulamali whose telephone number is (571) 272-3014. The examiner can normally be reached on Monday-Friday, 7:00AM - 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on (571) 272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

QG.
January 29, 2007.

MOHAMMED GHAYOUR
SUPERVISORY PATENT EXAMINER